

Claims

- [c1] An extraction surface cleaning apparatus having;
- a housing with a liquid dispensing system and a fluid recovery system mounted thereto;
 - the liquid dispensing system including:
 - a liquid dispenser for applying liquid to the surface to be cleaned;
 - a fluid supply chamber for holding a supply of cleaning fluid;
 - a fluid supply conduit fluidly connected to the fluid supply chamber and to the liquid dispenser for supplying fluid to the dispenser;
 - the fluid recovery system including:
 - a recovery chamber for holding recovered fluid;
 - a suction nozzle;
 - a working air conduit extending between the recovery chamber and the suction nozzle; and
 - a vacuum source in fluid communication with the recovery chamber for generating a flow of working air from the suction nozzle through the working air conduit and to the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the suction nozzle and the working air conduit, and into the recovery chamber;
 - an elongated agitation brush mounted to the housing adjacent to the suction nozzle for rotation about a longitudinal axis and adapted to agitate the surface to be cleaned; and
 - a drive motor mounted in the housing and connected to the agitation brush for rotation of the elongated agitation brush about the longitudinal axis;
- the improvement which comprises:
- the elongated agitation brush is selected from a multi-row, helically arranged bristle brush and a helically arranged twisted wire brush.
- [c2] An extraction surface cleaning apparatus according to claim 1 wherein the helically arranged bristle brush has at least four rows of bristles.
- [c3] An extraction surface cleaning apparatus according to claim 1 wherein the helically arranged twist wire brush comprises a continuous helical array of radially extending bristles bound by a pair of twisted wires forming a spindle.

- [c4] An extraction surface cleaning apparatus according to claim 1 wherein the elongated agitation brush is mounted to the housing through a pair of arms which are pivotally attached at one end to the housing and rotatably support the elongated brush roll at another end thereof; and a spring between the arms and the housing biases the elongated brush roll with respect to the housing into contact with the surface to be cleaned.
- [c5] An extraction surface cleaning apparatus according to claim 4 wherein at least one of the arms has a resiliently mounted projection which bears against a surface of the housing to resist transient vibrations of the elongated agitation brush with respect to the housing.
- [c6] An extraction surface cleaning apparatus according to claim 5 wherein the resiliently mounted projection is mounted on an integrally formed flexible tab on the at least one arm.
- [c7] An extraction surface cleaning apparatus according to claim 1 and further comprising a fabric cover encircling the elongated agitation brush and removably mounted thereto for contacting the surface to be cleaned.
- [c8] An extraction surface cleaning apparatus according to claim 7 wherein the elongated cover is a fabric and is secured onto the elongated agitation brush with a hook and pile fastener.
- [c9] An extraction surface cleaner apparatus according to claim 1 wherein the housing is a hand held deep cleaner housing.
- [c10] An extraction surface cleaning apparatus according to claim 1 wherein the housing comprises a base including a pair of wheels for movement along a surface to be cleaned, and further includes a handle pivotally mounted to the base for manipulation of the base along a floor surface to be cleaned.
- [c11] An extraction surface cleaning apparatus according to claim 1 wherein the working air conduit includes a flexible hose which is joined at one end to the housing and further comprising a hand tool mounted to a free end of the hose and the suction nozzle and the elongated agitation brush are mounted in the

hand tool.

- [c12] An extraction surface cleaning apparatus according to claim 10 wherein the agitation motor is a turbine motor mounted in the hand tool.
- [c13] An extraction surface cleaning apparatus having;
a housing with a liquid dispensing system and a fluid recovery system mounted thereto;
the liquid dispensing system including:
a liquid dispenser for applying liquid to the surface to be cleaned;
a fluid supply chamber for holding a supply of cleaning fluid;
a fluid supply conduit fluidly connected to the fluid supply chamber and to the liquid dispenser for supplying fluid to the dispenser;
the fluid recovery system including:
a recovery chamber for holding recovered fluid;
a suction nozzle;
a working air conduit extending between the recovery chamber and the suction nozzle; and
a vacuum source in fluid communication with the recovery chamber for generating a flow of working air from the suction nozzle through the working air conduit and to the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the suction nozzle and the working air conduit, and into the recovery chamber;
an elongated agitation brush mounted to the housing adjacent to the suction nozzle for rotation about a longitudinal axis; and
a drive motor mounted in the housing and connected to the agitation brush for rotation of the elongated agitation brush about the longitudinal axis;
the improvement which comprises:
the elongated agitation brush is mounted to the housing through a pair of arms which are pivotally attached at one end to the housing and rotatably support the elongated brush roll at another end thereof; and
a spring between the arms and the housing biases the elongated brush roll with respect to the housing into contact with the surface to be cleaned.

- [c14] An extraction surface cleaning apparatus according to claim 13 wherein at least one of the arms has a resiliently mounted projection which bears against a surface of the housing to resist transient vibrations of the elongated agitation brush with respect to the housing.
- [c15] An extraction surface cleaning apparatus according to claim 14 wherein the resiliently mounted projection is mounted on an integrally formed flexible tab on the at least one arm.
- [c16] An extraction surface cleaning apparatus having;
a housing with a liquid dispensing system and a fluid recovery system mounted thereto;
the liquid dispensing system including:
a liquid dispenser for applying liquid to the surface to be cleaned;
a fluid supply chamber for holding a supply of cleaning fluid;
a fluid supply conduit fluidly connected to the fluid supply chamber and to the liquid dispenser for supplying fluid to the dispenser;
the fluid recovery system including:
a recovery chamber for holding recovered fluid;
a suction nozzle;
a working air conduit extending between the recovery chamber and the suction nozzle; and
a vacuum source in fluid communication with the recovery chamber for generating a flow of working air from the suction nozzle through the working air conduit and to the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the suction nozzle and the working air conduit, and into the recovery chamber;
an elongated agitation brush mounted to the housing adjacent to the suction nozzle for rotation about a longitudinal axis; and
a drive motor mounted in the housing and connected to the agitation brush for rotation of the elongated agitation brush about the longitudinal axis;
the improvement which comprises:
a fabric cover encircling the elongated agitation brush and removably mounted thereto for contacting the surface to be cleaned.

- [c17] An extraction surface cleaning apparatus according to claim 16 wherein the elongated cover is a fabric and is secured onto the elongated agitation brush with a hook and pile fastener.
- [c18] An extraction surface cleaning apparatus having;
a housing with a liquid dispensing system and a fluid recovery system mounted thereto;
the liquid dispensing system including:
a liquid dispenser for applying liquid to the surface to be cleaned;
a fluid supply chamber for holding a supply of cleaning fluid;
a fluid supply conduit fluidly connected to the fluid supply chamber and to the liquid dispenser for supplying fluid to the dispenser;
the fluid recovery system including:
a recovery chamber for holding recovered fluid;
a suction nozzle;
a working air conduit extending between the recovery chamber and the suction nozzle; and
a vacuum source in fluid communication with the recovery chamber for generating a flow of working air from the suction nozzle through the working air conduit and to the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the suction nozzle and the working air conduit, and into the recovery chamber;
an elongated agitation brush mounted to the housing adjacent to the suction nozzle for rotation about a longitudinal axis and adapted to agitate the surface to be cleaned; and
a drive motor mounted in the housing and connected to the agitation brush for rotation of the elongated agitation brush about the longitudinal axis;
the improvement which comprises:
the elongated agitation brush is mounted to the housing through a pair of arms which are pivotally attached at one end to the housing and rotatably support the elongated brush roll at another end thereof; and
at least one of the arms has a resiliently mounted projection which bears against a surface of the housing to resist transient vibrations of the elongated

agitation brush with respect to the housing.

[c19] An extraction surface cleaning apparatus according to claim 14 wherein the resiliently mounted projection is mounted on an integrally formed flexible tab on the at least one arm.